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ABSTRACT BOOK

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parameters and an enhancement of the immune response, suggesting positive effects on health, welfare and resistance to farming conditions. Further studies are in progress to evaluate other biochemical parameters related to fish health and quality of the product.

THE IMPACT OF WASTE WATER TREATMENT PLANTS ON ALPINE RIVERS AFFECTED BY WATER SCARCITY: STATE OF THE ART AND PRELIMINARY RESULTS

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Alpine rivers have always been considered the “water reservoir” of Europe, due to the quantity and quality of water stored in this area. Currently, Alpine rivers provide water for drinking, irrigation, artificial snowmaking, and hydroelectric power plants, as well as being a biodiversity reserve and a strategic resource for tourism. However, the ability of watercourses to offer such ecosystem services is increasingly threatened by climate change: the regime of our Alpine rivers is more and more altered, and the general reduction in flow rates occasionally causes the total disappearance of superficial water for several months each year. Consequently, the human demand on water, in particular for agriculture and for the production of electricity, is increasingly in conflict with the needs of river ecosystems. In this context, an often-overlooked topic is the ability of rivers to “self-purify” and to cope with pollution from diffuse and punctual sources, such as urban and industrial wastewater. The reduction of flows linked to climate change alters the effectiveness of these essential processes, and the consequences of that will be significant and serious, even though they are little known. During the more and more frequent periods of drought, emissions from point sources such as urban wastewater discharges are less diluted: this leads to an increase in the concentrations of pollutants and pathogenic microorganisms in watercourses. Therefore, the impacts determined on water bodies by the discharges of purified wastewater directly affects their ability to implement natural self-purification processes. Furthermore, in some cases, the collection and purification systems are inadequate to reduce the polluting load produced by urban or industrial settlements. In addition to this, it is important to consider the sewage discharges of non-purified civil and industrial wastewater and / or other inputs. Clearly, the presence of the aforementioned substances can affect the development of the biotic components of the river system by altering their balances and therefore modifying the expected communities (e.g. macroinvertebrates and diatoms communities). On the other hand, however, the ecosystem itself constitutes an important element for the reduction and the containment of these substances. Overall, therefore, what is recorded is a deterioration in the quality of natural waters, with an alteration of the biological balances that also regulate the life of ecosystems. The aim of this study is to analyse the impact caused by climate change (in particular by the reduction of flows) on the effectiveness of the water treatment processes of three different oligomesotrophic rivers of the Po basin, specifically Pellice, Stura and Malone rivers. In order to achieve this objective, it has been chosen a multidisciplinary approach, which contemplates ecological, chemical and microbiological aspects, and which provides scientific support to an innovative management model, more attentive to water enhancement.

CHERAX DESTRUCTOR (CLARK, 1836) AND CHERAX QUADRICARINATUS (VON MARTENS, 1868): SAFETY AND NUTRITIONAL QUALITY

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Two species of freshwater Parastacidae (*Cherax quadricarinatus* and *Cherax destructor*) are used for breeding in several countries and to date also in Italy in one aquaculture plant located near Catania (Sicily). Although they are Australian, they seem to have some of the peculiar properties that make it important, strategic and highly appreciated species for aquaculture facilities in Italy. In fact, they mature early, have multiple reproductive cycles in a year, females can lay over a thousand eggs in a single brood and seem to tolerate wide ranges of temperature (Haubrock *et al.*, 2021). Several authors have studied the *Cherax* genus from different points of view: diseases, moulting phases and the immune responses under stress conditions (Mac Loughlin *et al.*, 2016; Sacristán *et al.*, 2016; Foysal *et al.*, 2020). To date, even if it is known the economic value of these species, the nutritional properties for human were not yet evaluated. The economic expenses behind the maintenance of an aquaculture facilities must certainly be justified by: i) maintenance of species that can guarantee a competitive product on the market; ii) their good nutritional levels as well as for the organoleptic characteristics. Our study, conducted as part of a project “POFEAMP 02/INA/17” (02/INA/17, PO-FEAMP 2014-2020), represents for the first time a preliminary evaluation of some macronutrient parameters important to know the nutritional properties of these animals. For this reason, some parameters, as the level of total protein, cholesterol, triglyceride, glucose and lactate dehydrogenase in two *Cherax* species, *Cherax quadricarinatus* and *Cherax destructor* were evaluated in haemolymph and in muscle tissue. These results can be useful both for evaluating the good health of these animals kept in aquaculture facilities and for evaluating better their nutritional properties. In the future, these *Cherax* species could increase their consumption and allow their greater presence in dietary habits.

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